

# Bell's Palsy: A Review

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## Abstract

Bell's palsy is a facial nerve defect of unknown etiology. The aim of this article is to put forth a review on Bell's palsy and identifying its clinical presentation, differentiate it from other similar conditions, having a brief idea of various existing treatment modalities. Treatment usually focuses on restoring the function of facial muscles and recovery.

**Keywords:** *Bell's palsy, clinical features, differential diagnosis, various treatment modalities.*

## Introduction

The term **facial palsy** generally refers to the "weakness of the facial muscles, mainly resulting from temporary or permanent damage to the facial nerve"<sup>(1)</sup>. If the etiology of facial palsy is not known then it is considered to be Bell's palsy. It is a unilateral acute peripheral neuritis originating due to disruption in the lower motor neuron of the facial nerve. Immunological, infectious diseases and ischemia may lead to Bell's palsy still its etiology are questionable. If we talk about the history of discovery of Bell's palsy, much research has been done for it, the disorder is named after the scientist Sir Charles Bell while his research in the royal society of London. When we talk about the clinical feature of Bell's palsy, we find that it happens suddenly, usually affecting one side, facial palsy of lower motor neurons accompanied with pain in the posterior part of the ear, alteration of taste sensation, subjective alteration in facial sensation and hyperacusis.<sup>(2,3)</sup> Treatment usually focuses on restoring the function of facial muscles and recovery.

## Discussion

Bell's palsy is diagnosed more often in young females. Cases are usually reported in the age group of 21-40. The right side of the face is commonly affected.<sup>(4)</sup> As many times recurrence is reported in the first two years from the onset so follow up of patients should be carried out for 2-3years, mainly child patients.<sup>(5)</sup> The incidence rate varies from 11.5 to 40.2 out of every 100 000 people with an annual incidence rate in the United Kingdom 20.2 out of every 100 000 population, in Japan 30 out of every 100 000 and in the United States 25-30 out of 100 000.<sup>(3,6)</sup> When Virus infection is the cause of Bell's palsy, it progresses by the inflammation and facial nerve gets demyelinated. As for maintenance of myelin sheath vitamin B plays a major role, so demyelination can prolong the time required for the normal function of the facial nerve.<sup>(7)</sup> When evaluating a patient, the following note should be kept in mind, in case of a patient of Bell's palsy occurs suddenly (within 3 days), the diagnosis should eliminate all the reasons for facial muscle fatigue, mostly unilateral, usually self limits itself.<sup>(8)</sup> Certain risk groups are more prone to Bell's palsy, those are pregnant lady, obese persons, hypertensive patients diabetic cases, upper respiratory tract infections.<sup>(1)</sup> There are still some factors may lead to Bell' palsy: change in atmospheric pressure, cold exposure, facial nerve compression near stylomastoid foramen, bacterial, fungal, viral infections (herpes zoster, EB virus, hepatitis B virus, HIV, etc), Melkerson-Rosenthal syndrome, Multiple Sclerosis, pregnancy.<sup>(3)</sup>

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**Table 1. Conditions & Disting**

Condition	Distinguishing Factors
Guillain-Barre	Paralysis starting from feet going up to trunk and hand
Melkersson-Rosenthal syndrome	Edema in face and lip region and presence of fissure or folds on the dorsal surface of the tongue
Multiple sclerosis	Atypical neurological symptoms
Ramsay Hunt syndrome	Vesicular eruption in-ear canal or pharynx
Sarcoidosis	Bilateral
Stroke	Extremities on the affected side are often involved
Lyme disease	History of tick exposure, rash
Otitis media	Earache, pyrexia, deafness
HSV	Fever, malaise
Encephalitis	Headache, stiff neck, CSF abnormalities

To diagnose whether there is Bell’s palsy or not, look for asymmetry of the face during the interview; observe closely than the blinking pattern, the commissure of lips, and the nasolabial folds. Under general examination; otoscopy, checking for growth near the head and neck region by palpating that area, and skin examination is done. Assessment of motor function, done by checking whether the patient can normally move eyebrow upward-downward, forceful closure of eyes, Smiling,blowing the cheeks, pursing the lips, grimacing if clinically indicated, then go for assessment of special sensation like the sensation of ear and the face, gustatory sensation of anterior two-thirds of the tongue. Orbicularis muscle reflex is checked taping the glabella and observing whether there is an asymmetry in the opening-closing pattern of the eye or not. Bell phenomenon: observe the upward movement of eyes during forced eye-closure.<sup>(12)</sup> In Inverse Bell’s phenomenon, there is a downward movement of eyeball rather than upward, which can be seen in patients with Bell’s palsy, after conjunctival scarring, even in the normal population.<sup>(13)</sup> Clinical features of Bells palsy include ipsilateral paralysis or weakness of the lower and upper muscles of the face, drooping of eyelids of the same side, incomplete closure of eye that causes drying of eye, epiphora,drooping of the corner of the mouth, altered gustatory sensation on the same side, dysphagia due to muscle weakness leading to accumulation of food on ipsilaterally, saliva rolled down from corner of mouth, ipsilateral loss or alteration of sensations of the face pain or due to involvement of stapedius muscle hyperacusis (sensitivity to sound increases.)<sup>(14)</sup>

**Treatment:** “Kabat rehabilitation consists of the facilitation of the voluntary response of an impaired muscle through the global pattern of an entire muscular section that undergoes resistance.”In this rehabilitation protocol, three regional fulcra were taken into consideration: upper, intermediate, and lower fulcrum whose activation is done by various facial exercises. Kabat rehabilitation when accompanies with standard steroid treatment of severe Bells palsy, in maximum cases there is better and faster recovery than only medication is given.<sup>(15,16)</sup> If a patient is suspected for acute Bell’s palsy then asses eye closure, whether it is adequate or inadequate. If adequate then no eye protective measures needed, and if it is inadequate then eye-protective eye measure will strongly be recommended. Then next assess the severity of paresis, if it is mild to moderate then corticosteroids will be strongly recommended and if severe to complete paresis is there then along with corticosteroids antivirals will also be recommended. If there is complete recovery during follow up and assessment then good or else if there is a failure to recover or progressive weakness then go for exercise and physiotherapy<sup>(17)</sup>, consult specialist, imaging is used to exclude out any neoplasm.<sup>(18-20)</sup> The treatment approach of Bell’s palsy targets the reduction of inflammation and viral infection. For inflammation, steroids are given like prednisolone, betamethasone, hydrocortisone, methylprednisolone, dexamethasone, and cortisone and for viral infection acyclovir, famciclovir, and valacyclovir is usually used.<sup>(21-23)</sup> (The use of steroids plus antivirals and the use of steroids plus mecobalamin are 2 good choices.)<sup>(24)</sup> MIRE therapy in which infrared light of wavelength 890nm, is used on

the area anterior and posterior to the ear, the temporal and lower jaw area of the affected side for the half-an-hour cycle.<sup>(25,26)</sup> When a case of facial palsy comes to a dentist, the following can be followed: thorough history taking and physical examination to exclude all possible causes for facial palsy, routine laboratory testing, and diagnostic imaging should be avoided if it is a new case of Bell’s palsy, oral steroids (prednisolone) can be given within 72 hours of the appearance of symptoms, (For adults who come within 72 hours of onset treatment recommendations are “Corticosteroids: Prednisone 50 mg orally daily for 5 days, followed by 10 mg less each day for 5 days, Prednisolone 50 mg OD for 10 days, Antivirals: Valacyclovir 1 g TID for 7 days, Acyclovir 400 mg OD five times daily for 7 days).”<sup>(12)</sup> The basic treatment is neuromuscular re-education training. Exercises include (wrinkling of the forehead, smiling, snarling, and puckering of the lip) with speed and amplitude variation; exercises are done on one side of the face to have controlled movement, relaxing lower jaw doing exercises for eye and mouth simultaneously inhibiting synkinesis (small slower movements)<sup>(27,28)</sup>

**Table 2**

Possible complications	Treatment
Incapable of the closure of eye of affected side (causing corneal irritation and ulceration)	Artificial tears
Impaired muscle eyelid	Tarssoraphy or gold weights implantation in the eyelid of the upper eye
For asymmetrical face or Muscular rigidity	Cosmetic surgery or BOTOX injections

**Conclusion**

Bell’s palsy with higher neutrophil to lymphocyte (NLR) ratio usually linked with prolonged time for recovery. Therefore NLR can be used for the prognosis of time taken for recovery of Bell’s palsy patients. However, the patient may complain like symptoms such as facial spasm, synkinesis, and paresis.

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**Reference**

1. Baugh RF, Basura GJ, Ishii LE, Schwartz SR,

Drumheller CM, Burkholder R, et al. Clinical practice guideline: Bell’s palsy. *Otolaryngol--Head Neck Surg Off J Am Acad Otolaryngol-Head Neck Surg.* 2013 Nov;149(3 Suppl):S1-27.

2. Diamond M, Wartmann CT, Tubbs RS, Shoja MM, Cohen-Gadol AA, Loukas M. Peripheral facial nerve communications and their clinical implications. *Clin Anat N Y N.* 2011 Jan;24(1):10–8.

3. Eviston TJ, Croxson GR, Kennedy PGE, Hadlock T, Krishnan AV. Bell’s palsy: aetiology, clinical features and multidisciplinary care. *J Neurol Neurosurg Psychiatry.* 2015 Dec;86(12):1356–61.

4. Mustafa AHK, Sulaiman AM. The Epidemiology and Management of Bell’s Palsy in the Sudan. *Open Dent J.* 2018 Oct 25;12:827–36.

5. Cirpaci D, Goanta CM, Cirpaci MD. Recurrences of Bell’s palsy. *J Med Life.* 2014;7 Spec No. 3(Spec Iss 3):68–77.

6. De Diego JI, Prim MP, Madero R, Gavilán J. Seasonal patterns of idiopathic facial paralysis: a 16-year study. *Otolaryngol--Head Neck Surg Off J Am Acad Otolaryngol-Head Neck Surg.* 1999 Feb;120(2):269–71.

7. Wang L-L, Guan L, Hao P-L, Du J-L, Zhang M-X. Acupuncture and vitamin B12 injection for Bell’s palsy: no high-quality evidence exists. *Neural Regen Res.* 2015 May;10(5):808–13.

8. Gilden DH. Clinical practice. Bell’s Palsy. *N Engl J Med.* 2004 Sep 23;351(13):1323–31.

9. Tiemstra JD, Khatkhate N. Bell’s palsy: diagnosis and management. *Am Fam Physician.* 2007 Oct 1;76(7):997–1002.

10. Makeham TP, Croxson GR, Coulson S. Infective causes of facial nerve paralysis. *Otol Neurotol Off Publ Am Otol Soc Am Neurotol Soc Eur Acad Otol Neurotol.* 2007 Jan;28(1):100–3.

11. Keane JR. Bilateral seventh nerve palsy: analysis of 43 cases and review of the literature. *Neurology.* 1994 Jul;44(7):1198–202.

12. Patel DK, Levin KH. Bell palsy: Clinical examination and management. *Cleve Clin J Med.* 2015 Jul;82(7):419–26.

13. Shitole S, Jakkal T, Khaire B. Inverse Bell’s Phenomenon: Rare Ophthalmic Finding Following Ptosis Surgery. *J Clin Diagn Res JCDR.* 2015 Mar;9(3):ND01-ND2.

14. Somasundara D, Sullivan F. Management of Bell's palsy. *Aust Prescr*. 2017 Jun;40(3):94–7.
15. Monini S, Iacolucci CM, Di Traglia M, Lazzarino AI, Barbara M. Role of Kabat rehabilitation in facial nerve palsy: a randomised study on severe cases of Bell's palsy. *Acta Otorhinolaryngol Ital Organo Uff Della Soc Ital Otorinolaringol E Chir Cerv-facc*. 2016 Aug;36(4):282–8.
16. Barbara M, Antonini G, Vestri A, Volpini L, Monini S. Role of Kabat physical rehabilitation in Bell's palsy: a randomized trial. *Acta Otolaryngol (Stockh)*. 2010;130(1):167–72.
17. Beurskens CHG, Heymans PG. Mime therapy improves facial symmetry in people with long-term facial nerve paresis: a randomised controlled trial. *Aust J Physiother*. 2006;52(3):177–83.
18. de Almeida JR, Guyatt GH, Sud S, Dorion J, Hill MD, Kolber MR, et al. Management of Bell palsy: clinical practice guideline. *CMAJ Can Med Assoc J J Assoc Medicale Can*. 2014 Sep 2;186(12):917–22.
19. Raghavan P, Mukherjee S, Phillips CD. Imaging of the facial nerve. *Neuroimaging Clin N Am*. 2009 Aug;19(3):407–25.
20. Schwaber MK, Zeale D, Netterville JL, Seshul M, Ossoff RH. The use of magnetic resonance imaging with high-resolution CT in the evaluation of facial paralysis. *Otolaryngol--Head Neck Surg Off J Am Acad Otolaryngol-Head Neck Surg*. 1989 Oct;101(4):449–58.
21. Fu X, Tang L, Wang C, Li M, Wu H, Li J, et al. A Network Meta-Analysis to Compare the Efficacy of Steroid and Antiviral Medications for Facial Paralysis from Bell's Palsy. *Pain Physician*. 2018;21(6):559–69.
22. Khajeh A, Fayyazi A, Soleimani G, Miri-Aliabad G, Shaykh Veisi S, Khajeh B. Comparison of the Efficacy of Combination Therapy of Prednisolone - Acyclovir with Prednisolone Alone in Bell's Palsy. *Iran J Child Neurol*. 2015;9(2):17–20.
23. Quant EC, Jeste SS, Muni RH, Cape AV, Bhussar MK, Peleg AY. The benefits of steroids versus steroids plus antivirals for treatment of Bell's palsy: a meta-analysis. *BMJ*. 2009 Sep 7;339:b3354.
24. Zhang H, Du H, Qian M, Wang Y, Zhou S, Chen J, et al. A study of affecting the recovery of Chinese patients with Bell palsy. *Medicine (Baltimore)*. 2019 Jan;98(4):e14244–e14244.
25. Ng SY, Chu MHE. Treatment of Bell's Palsy Using Monochromatic Infrared Energy: A Report of 2 Cases. *J Chiropr Med*. 2014 Jun;13(2):96–103.
26. Rubis LM. Chiropractic management of Bell palsy with low level laser and manipulation: a case report. *J Chiropr Med*. 2013 Dec;12(4):288–91.
27. Pourmomeny AA, Asadi S. Management of synkinesis and asymmetry in facial nerve palsy: a review article. *Iran J Otorhinolaryngol*. 2014 Oct;26(77):251–6.
28. Kim H-S, Jung J, Dong SH, Kim SH, Jung SY, Yeo SG. Association Between High Neutrophil to Lymphocyte Ratio and Delayed Recovery From Bell's Palsy. *Clin Exp Otorhinolaryngol*. 2019 Aug;12(3):261–6.